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ABSTRACT

In an effort to try to better understand the emerging needs of modern society and to derive more meaningful solutions to address these needs, social planners have begun to depend more and more heavily on the accumulation and analysis of social data, and social data base systems have experienced a tremendous growth in this country during the last two decades. The data generated from these systems have been used not only in social needs assessment and planning efforts, but also for purposes of evaluation, advocacy, and public relations. This paper focuses on computer readable data base systems available for remote access, which contain social, demographic or economic numeric, or numeric textual data together. Only on-going, non-archival systems in the United States are covered. The Family and Child Statistics information system, which was developed through the Texas Department of Community Affairs, Early Childhood Development Division, is described as an example of a social numeric data base. (Author/RAC)

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PUBLICLY-AVAILABLE NUMERIC DATA BASE SYSTEMS
USEFUL IN SOCIAL PLANNING AND POLICY-MAKING:
A GENERAL DISCUSSION AND A CASE STUDY

by

Pam Autrey

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Introduction

Background

The growing complexity of our modern society and the resultant increase in governmental involvement at every level of our political units have greatly compounded the task of social planners and policy-makers.

In an effort to try to better understand the emerging needs of modern society and to derive more meaningful solutions to address these needs, social planners have begun to depend more and more heavily on the accumulation and analysis of social data.

Although the productiveness of these efforts has sometimes been questionable, the fact remains that social data base systems have experienced a tremendous growth in this country during the last two decades. The data generated from these systems have been used not only in social needs assessment and planning efforts, but also for purposes of evaluation, advocacy and public relations.

Scope and Definitions

This paper is presented in two sections. The first section focuses on a general discussion of publicly-available

numeric data base systems useful in social planning and policy-making. The second section presents a brief case study of one such system, the Family and Child Statistics information system, which I developed while working at the Texas Department of Community Affairs.

As a very thorough review of numeric data bases and systems was recently published by LUEDKE, KOVACS AND FRIED, this paper was able to draw on aspects of the review which highlighted topics of specific interest to publicly-available numeric data base systems useful in planning and policy-making.

Limitations of and definitions for the scope of the paper are as follows:

1) Publicly-available.--Only publicly-available data base systems are considered. This is defined as being available for remote access to any user or institution.

2) Numeric.--Only systems containing numeric data or numeric and textual data together are addressed. Numeric data are defined as real or measured quantities.

3) Data base systems.--Again, the definition used by LUEDKE, KOVACS AND FRIED was chosen for purposes of this paper. Only computer-readable collections of data in combination with a search system which can retrieve the data are considered here. LUEDKE, KOVACS AND FRIED take this definition one step further, however, and limit it to those systems which can also manipulate the retrieved data.

4) Useful in social planning and policy-making.--This qualifier limits the discussion to those systems containing

social, demographic or economic data which would assist researchers, planners and decision-makers in planning social programs, legislation, regulations, etc.

5) On-going, non-archival.--A further limitation is that only systems containing data which are updated on a recurrent basis are examined. This eliminates strictly archival data such as that generated by a one time survey.

6) Geographical coverage.--Although there are many international numerical data base systems in existence (e.g. CHRONAS, a data base system of economic indicators of European communities; CANSIM, Canadian economic data; OECD's Principal Economic Indicators system; and the University of Essex's Social Science Research Council Survey Archive), this paper will focus on systems useful to social planning and policy-making in the United States.

7) Time coverage.--Any system which is still in existence will be considered for our purposes here.

A General Discussion

Historical Context

Numerical data have for some time been of interest to statesmen. The word "statistics" originally meant information important to the state. Enumerations of populations have been conducted from ancient times. It was in Rome, however, that a census was first established upon a regular footing.

Origins of social data.--There have traditionally been

four general categories of social statistics as classified by origination of the data, as follows:

1) Census data.--The first and most commonly discussed category is census data, or the periodic government counts of population and households.

2) Social surveys.--The second type of data is that collected by social surveys, usually based upon a sample of the population. The Roper Public Opinion polls are an example of this category.

3) Record-keeping data.--This category reflects data obtained by record keeping functions of organizations. GOTTLIEB and HEARLE refer to these data as operational data. The Statistical Table Assembly and Retrieval (STAR) system of the U.S. Social Security Administration is an example of data in this category.

4) Derived data.--The fourth category by origination of data is data which is generated or derived by massaging or manipulating data in one of the other categories. Predicasts, Inc. has several data files which serve as examples of this category.

Other characteristics of social data.--In addition to categorizing data by point of origination, it is useful to note some of the other characteristics which often apply to social data.

1) Geographic specific.--Social data are almost always specific to a certain geographical area. The definitions of these areas can vary and can include very small units or very

large units. Many systems contain a variety of geographical units in the same system.

2) Time-specific.--Social data are also usually time-specific, i.e. they reflect a given fact for a given point in time. Again, the time frame can vary, but it is an important aspect of the context within which social data must be interpreted.

Capabilities of Social Data Systems Enabled by Computerization

The beginnings of the computer itself were sparked because of the need to deal with large social numerical data files. Thus in 1880, Herman Hollerith invented machine-readable cards to deal with one of the first vast social data files in this country--the U.S. Census.

Since the first Hollerith punched cards, the application of modern computer technology has expanded the scope, flexibility, timeliness and character of socio-economic numeric data base systems, and consequently of social research. FRIED (Feb. 1975) stated that although the computer was first regarded as a defense against the "data blizzard," it has actually served to increase the amount of data being generated.

The first systems, such as the Census, were primarily used to provide arithmetic summaries by batch processing the data. These early systems were designed for specific and restricted uses. They not only allowed the data to be retrieved quickly and calculated easily, but they also made it possible to make much more data available to the public than had been practical in printed form. The capability of easily generating

new data by massaging the original data was also an important aspect of these first computerized social data systems. Social research took on a new dimension with computerized social data systems.

LUEDKE, KOVACS AND FRIED mention several capabilities which have affected existing numeric retrieval and analysis systems, including: 1) improved access to computer files, 2) cheaper on-line storage costs, 3) the use of minicomputers, 4) improved data-gathering techniques, and 5) increased availability of powerful retrieval and analysis packages.

The advent of on-line access and distributed processing systems with intelligent terminals has opened a much more flexible and exciting door for social researchers. Users can now retrieve data from a centralized system, call up any number of statistical routines to manipulate the data, input their own data at their own locations, and format the output to suit their needs. With distributed processing, users can retrieve selected data from a central system and build their own personal file, integrating their own and other data on their intelligent terminals.

Some systems, such as Predicasts, even allow a user to jump from a numerical file to a bibliographical file while staying in the same system.

Future technological innovations currently on the horizon promise to greatly enhance the capabilities of social numeric data systems. Some of the most exciting research currently underway includes the following:

1) Data tagging and flagging.--Indexing of numerical data contained in publications by flags (i.e., codes describing the type of data in a document or record) and by tags (i.e., more detailed identifiers of the data characterizing more specifically the data contained in the document) is currently being investigated and will have great implications on the future of social research and social planning, as these efforts should eventually lead to fact and knowledge retrieval.

2) Integration of bibliographic and numeric data files.--Progress in the area of linking files by using the same system and the same command language will make the job of the social data user much easier.

3) Transferability of data files.--This capability allows users at one site to access files at another site, either through networks, data base vendors such as Lockheed, etc. The lack of this capability on a large scale basis is currently a drawback for numeric data base users. GREENBERGER discusses the possibility of educational data networks and the obstacles to their implementation, and BISCO also addresses his visions of social information transfer networks of the future.

4) Electronic handbooks.--FRIED (Feb. 1975) looks forward to handbooks of numeric data being placed on-line so that updating can be accomplished on a more timely basis and users will not have to await publication for more current data.

5) On-line directory of numeric databases.--An on-line directory of numeric data bases is eagerly anticipated by

numeric data base users. This would parallel the work being done by Martha WILLIAMS on bibliographic data bases. This directory would describe the location and contents of each data base listed and provide a "mapping" capability to lead users into relevant data bases in a manner that would require little user expertise.

7) Improved publication capabilities.--Better technology for publishing selected data from numeric data bases will enhance the usefulness of social data systems. More sophisticated graphic capabilities which allow better computer drawn maps, graphs and charts will also enhance publication capabilities.

8) More flexible input-output mechanisms.--This capability relates to the one mentioned above and will assist in the cost/effectiveness of numerical data systems.

Landmarks

The producers of publicly-available numeric data base systems useful in social planning and policy-making fall into three general categories, as follows:

- 1) Governmental agencies
- 2) Non-profit, private agencies
- 3) For-profit, private agencies

Of these, by far the largest producer in the United States is governmental agencies. A great number of state and regional level numerical data bases abound for social data, such as the Wisconsin Assets and Income Studies. The proliferation of state agency data bases is evident in the

newly published Directory of Data Base Resources in Texas State Government. However, the better known governmental systems are produced by the Federal government. Although technically most government systems are "publicly-available," not many are widely known and used in the area of social data.

The commercially available systems are often better known and have a broader user audience, although numeric data bases in general have smaller audiences than bibliographical data bases. The commercial data base systems normally contain economic and financial data primarily and social and demographic data secondarily. The existence of marketing data is often given credit for attracting more users to commercial systems.

Some of the landmark publicly-available numeric data systems useful in social planning are as follows:

1) U.S. Census.--Undoubtedly the best known social data base systems in this country are the U.S. Censuses of Population and Housing. Beginning with the 1970 Census, some organizations that market computer time-sharing began to offer summary tapes and public use sample tapes to their users. CENSAC on National CSS, Inc. and CENSTAT on CDC's Cybernet are two such services. These services usually include access to the files along with specially developed software and display packages. The Data Use and Access Laboratories (DUALabs) has been one of the most active developers of software packages for use with Census and other Federal government files. Several commercial economic systems contain quite a bit of Census data also.

WELDON offers hope that the 1980 Census will be made available by the Bureau of the Census over a nation-wide network.

New legislation requiring the U.S. Census to be undertaken every five years will greatly enhance the timeliness and therefore the value of this system.

2) Educational Statistics Information Access Service.--EDSTAT is offered on-line by the National Center for Education Statistics through INFONET. This system provides access to data from several NCES files and uses the System 2000 data base management system for searching and analysis.

3) Predicasts Terminal System.--This system is the only system containing numerical data base files which is available from a large data base vendor. Lockheed offers Predicasts numeric data base files through the Predicasts Terminal System which gives users access to economic, social and industrial numeric data in over 300,000 international, national, state and metropolitan area time series. The novel feature of this system is that it permits interaction between computational files and literature files. Users can also input their own data, perform calculations using about 100 statistical programs, complete series, forecast, plot and tabulate.

4) Data Resources, Inc. (DRI).--DRI offers several data base systems, primarily financial in subject, which the company produces themselves and also offers other systems which are produced by other organizations. Their software packages for statistical analysis allow user construction of models and forecasts. DRI offers the U.S. Census Bureau's Current Population Survey and the U.S. Labor Bureau's Wholesale Price Index/Consumer Price Index, among others.

5) SITE II.--Offered by CACI, Inc., SITE II is basically a market analysis system, but like Predicasts, includes a great deal of social and demographic data from U.S. government agencies. CACI's QWICK QUERY software system can be used to retrieve and analyze data for defined geographic regions. Several standard formats are available for generating reports in tabular form.

6) Annual General Social Survey of the National Opinion Research Center of the University of Chicago.--The survey which provides data for this system is based on a cross-section national sample of adults in the U.S. It covers socio-economic status, social mobility, etc. of the population. The data base is available through the Inter-University Consortium for Political Research.

Characteristics of a Typical Social Numeric Data Base System

A typical numeric data base system for social and demographic data has several requirements in addition to the items mentioned under scope and definitions. The characteristics mentioned here are generally the basics needed by any such system, while the next section will consider the qualities and criteria that distinguish a good system. The general characteristics are as follows:

1) A computer-readable collection of numeric or numeric and textual data relevant to social planning and policy-making, along with computer facilities for using the data are, of course, necessary.

2) A software package or packages to allow retrieval of the data is also necessary. Analysis capability in this

software is almost a sine quo non for this type system as planners and policy-makers must usually be able to manipulate the data in order to formulate options. This software can take two forms. The first is a data base management system (DBMS) alone which allows retrieval and usually offers some computational capabilities. Examples of DBMS's being used with numeric data base systems include MRI's System 2000, Batelle's BASIS, Informatic's MARK IV, CACI's QWICK QUERY, and IBM's STAIRS.

The second software approach is to use a search system and call up statistical analyses packages separately. The packages in common use include the Statistical Package for the Social Sciences (SPSS), OMNITAB II from the U.S. National Bureau of Standards, and Biomedical Computer Programs (BMD) from the Health Sciences Center of the University of California at Los Angeles.

3) A data base definition which determines the structures and attributes of all entities to be stored within the data base is another very important requirement.

4) Output which can be formatted is an additional characteristic. This output can include such forms as display on a cathode ray tube, hard copy, or report generation hard copy.

Criteria for Evaluating the Quality of These Characteristics

While evaluation of any system necessarily depends on the users' requirements, there are several criteria which distinguish the quality of numeric data base systems containing social data. These are as follows:

1) Data in the system need to be qualified by other data or textual material. As both KISSMAN and SHUMAN point out, additional information is often required with numeric data to ensure that the data are not interpreted out of context. This is especially important with social data.

2) File organization must be such that data are handled in the most efficient manner. This is important to cost/effectiveness.

3) Validity and reliability of data must be established in a good system. This is a problem with data originating from surveys and from record-keeping systems.

4) Selection criteria are especially important in establishing a quality system. The comprehensiveness and amount of data included as well as the quality of the data must be considered.

5) Level of disaggregation is a very important criterion for social data systems useful for planning. The geographical units covered are often not small enough to be meaningful for local planners.

6) Up-to-dateness is another area of particular importance for users of social numerical data. The updating ease due to input capabilities affect cost/effectiveness, as mentioned before.

7) Retrieval capabilities, such as on-line interactive searching, ability to search for ranges, sorting capabilities, etc. are also important quality indicators.

8) Software attributes, such as languages, modularity, and interface with other packages are cited by CLAYDON as important criteria.

9) Manipulation capabilities are an important aspect of the software attributes consideration. The computational, analysis, and modeling capabilities can be very important to users.

10) Output capabilities are also important in evaluating the system. Graphic display, computer drawn maps, report generation capabilities, etc. must be examined.

11) Wide-scale availability is another important criterion.

12) "Transparency" of the system or ease of use for non-computer specialists is also important to system success.

13) Data base security is a last important criterion for evaluating a social data system. This will be discussed in more detail in the next section.

Problems and Issues Specific to Numerical Data Base Systems for Social Planning and Policy-Making

There are several problems and issues that are fairly specific to numerical data base systems containing social data and the management and use of these systems.

User training and interface.--One of the most commonly addressed issues relates to user interface and training in relation to numeric data base systems. The statistical and computational functions available for on-line interaction with numeric data files requires a degree of sophistication often not enjoyed by many searchers of bibliographic systems. This has implications for the future in designing numerical systems that require less user expertise, and also sparks the debate over whether the end user of the data or an information specialist should interact with the system. The education of librarians and information scientists should be affected by

the more widespread availability of numerical data base systems. Use of social data systems with modeling and analysis capabilities also requires at least an elementary knowledge of statistical methodology and social research.

Privacy and confidentiality.--The question of privacy and confidentiality is especially acute for social data systems generated by record-keeping functions of organizations and those generated from personal questionnaires and interviews. While summary statistical data are normally the desired output for social planners, safeguards against the invasion of privacy of individuals are difficult to incorporate.

Standards.--Standards are an important issue for all information systems, but the problems are compounded for social numerical data base systems. Definitions of social phenomena are more ambiguous and pose more problems in data transfer. Organizations such as the Statistical Policy Division of the U.S. Office of Management and the Budget, CODATA, and the American National Standards Institute are working on this issue. The advantages of standards may take their toll in the loss of flexibility and innovation, which makes this issue even more sensitive.

Movements in using social statistical data.--The application of modern computer technology greatly enhanced the capabilities of generating and using numerical data for social planning, as mentioned earlier, and has also inspired several movements concerning the use of social statistical data.

DUNN views these movements as efforts toward statistical reform and contends that each movement tends to reflect an oversimplification of the social information processing problem.

These movements include the following:

1) Social indicators movement.--This is probably the most popular of the movements today. SHUMAN defines social indicators as referring to some measure of overall well-being or quality of life. This quality indicator can be for society as a whole or often has been used to develop normative measures for certain populations or certain areas of life such as health or education. There is a considerable amount of controversy over the usefulness and validity of social indicators, but their prevalence continues to be an important influence on the use of social numerical data base systems.

2) Social accounting movement.--This movement often takes the form of input-output accounts governing non-economic social relationships.

3) Program evaluation movement.--The generation of data directed to the development and evaluation of specific social programs is the focus of this movement.

4) Micro-data movement.--The increased demand for more detailed and specific data, especially for smaller geographical units is the result of this movement.

5) Data bank movement.--This movement was fairly confined to the federal statistical sector and was very popular in the 1960's with the optimism about the capabilities of computers being billed as a panacea to all the problems involved in federal statistical gathering and disseminating efforts.

DUNN feels that the lack of a metatheory governing our social systems and social information processing structures are the real problems, and that none of these movements

address this broader issue. Several other social and political scientists (BRAYBROOKE; RUDNER) have tackled the concept of developing hypotheses and theories governing human behavior and social systems. Some of these efforts have resulted in methodologies useful for performing analyses and modeling of social data.

The other side of the coin is presented by SHUMAN and FARNSWORTH who feel that policy-makers really deal primarily in preferences and values and that data alone have little role in the policy process except to point out possible options. The possibility of bias in data presented and the old addage about lying with statistics has even taken away some of the credibility of the options generated by social data systems.

Organizational and administrative considerations.--There have been several discussions in the literature about where in the organizational structure of an institution numerical data base systems should be located. ROWE AND RYAN in one article and JONES in another have addressed the problem of U.S. Census data base access and the university library's role. The same issues apply to other numerical data bases in other types of institutions. Decisions must be made concerning the department which should finance, access and be responsible for social data bases. This issue is more acute with numerical data bases than with bibliographical data bases since the information center's role in bibliographical services is much more entrenched. The quandry about patrons of public libraries and university libraries paying for services such as accessing computerized Census data still rages also.

A Case Study: The Family and Child Statistics
Information System

The above general discussion of publicly-available numeric data base systems useful in social planning and policy-making included a very brief description of some of the large landmark systems in the country.

It also seems useful to examine in somewhat closer detail the characteristics of a smaller, more representative system. The Family and Child Statistics (FACS) system is a social numeric data base system available from the Texas Department of Community Affairs, Early Childhood Development Division.

How Did FACS Originate?

FACS was developed in order to facilitate the efforts of local communities on behalf of young Texas children. The Early Childhood Development Division for several years collected data on children and provided manual searches of the reams of materials in which the data were located to provide local planners and decision-makers with the statistical data they needed. These data were required not only for the needs assessment process and in planning services, but also for advocating the needs of children to funding agencies, the public, etc.

The growing number of requests for these information services prompted the automation of the data in 1977 so that requests could be filled on a more timely basis. The computerization of the statistics also allows retrievals to be made in a variety of formats and has provided the additional

capability of performing statistical analyses with the data. Thus the output can be tailored to the use to be made of the data.

What Does FACS Contain?

FACS contains approximately 200 data items on each county in Texas and for the State as a whole, yielding approximately 51,000 factors. Along with these factors are descriptive textual information. The data cover a broad range of subject topics relating to young Texas children and their families, such as population, ethnicity, income, livebirths, health and medical facilities, etc. Approximately thirty sources of data were tapped for input into the system, including both published and non-published sources produced by agencies such as the U.S. Census Bureau, the Texas Department of Human Resources, the Texas Department of Health, the Texas Medical Association, etc. Three criteria were used for selecting the data: 1) frequency of demand, based on past requests, 2) importance to early childhood research, as judged by an early childhood development specialist, and 3) availability for all counties in the state.

What Kinds of Output Can FACS Generate?

There are two primary formats in which data are retrieved from the system at the present time, as follows:

- 1) County statistical profile.--The most commonly requested format is a comprehensive report on a county which contains all the data in the system on that county. The data are arranged by broad subject categories with a brief introductory paragraph preceding the actual figures for that subject. This paragraph fulfill the function of relating the

statistics on the subject to some of the known research findings on the topic. It also suggests some possible program implications of the data. In order to facilitate comparisons and provide further contextual information by which users can weigh data on their own county, state data are provided alongside county data. The county profile report contains a table of contents and an index in the front and a list of sources at the end. A number at the end of each data factor description in the report refers to this list of sources.

2) Specialized analysis or tabulation in response to a particular need.--These searches simply retrieve the data contained in the system in different formats or perform calculations on the data to generate new data. Examples of different retrievals using one data factor such as "infant death rate" follows:

- a. List infant death rates for each county in the state.
- b. List all counties with an infant death rate greater than the national average of 17 per 1,000 births.
- c. Rank all counties from high to low by infant death rate.
- d. What is the range (i.e., highest and lowest figures) of infant death rates in all Texas counties.
- e. Did any county have an infant death rate greater than 20.5? List these counties.
- f. Calculate the infant death rate for the North Central Texas Regional Planning Council.

What Type of Equipment Is Used with FACS?

The FACS information system is located on the Control Data Corporation 6600 computer at the University of Texas at Austin. A general data base management software package, System 2000, is used with FACS. If more statistical analyses are needed than are provided by System 2000, other statistical packages can be used with the data. The system is accessed on-line via a Texas Instruments Silent 700 terminal. The staff of the Early Childhood Development Division will access the system for users at no charge.

Conclusions

The implications of this discussion for the future would seem to indicate a fairly rapid growth both in the number and size of publicly-available numeric data base systems useful for social planning and policy-making.

In addition to the advancing technological capabilities mentioned earlier and the decrease in cost of many of these capabilities, several other factors seem to be present to precipitate this growth, including the following:

- 1) Government at all levels is continuing to expand its involvement into the affairs of society.
- 2) Government decision-makers are looking more to hard data to help them make decisions or to justify decisions they have made independent of data.
- 3) Agencies are being called upon to account for their actions more often and must keep better records to document their activities. These data are also useful in planning and evaluating their programs.

4) Many federal grants are based on population formulas so agencies must have access to current data to get federal funding.

5) Advances in social research and methodology will give more credibility to social data manipulation.

Although many of these data base systems will continue to have fairly restricted audiences, it seems likely that as more directories of numerical data base systems are compiled, visibility, and consequently use, will increase for many of them. There is presently very little treatment in the literature of specific social numerical data bases, with the exception of the U.S. Census. Federal data bases need to be made more widely available for on-line searching. Hopefully, data base vendors, such as Lockheed and SDC, will begin to offer more numerical data base systems, although the geographic-specific nature of many of the social data systems discourages this possibility.

Growth in the availability of social numeric data base systems has varied implications for information scientists. More training and broader skills will be necessary and an increased demand for a new type of professional, which FARNSWORTH calls an "information generalist" will become more acute. This professional is needed to help think of new uses for the information available and to integrate many of the services being offered. There is also a great need for information professionals to provide training and technical assistance in interpreting and using social data for those users without these skills. Numerous professional organizations

are demonstrating more interest in social numeric data base systems. Among the more active are the Special Interest Group on Numeric Data Bases of the American Society of Information Science, the Association of Public Data Users, the Urban and Regional Information Systems Association, the Government Documents Roundtable of the American Library Association, and the Special Interest Group on Social and Behavioral Science Computing of the Association for Computing Machinery.

The full potential of social numeric data base systems will only be realized when they are integrated with bibliographic data bases and non-computerized information services. Social planners are normally more interested in facts per se, but they still require contextual information which assists them in interpreting and using these facts. While values and preferences will, and should, always be a major consideration for policy-makers, hard data still play an important role in pointing to the problems and solutions which need to be addressed.

As numeric data bases become more commonly available and technological innovations such as data mapping and transferring, knowledge retrieval, and integration of bibliographic and numeric data bases are realized, LICKLIDER's "on-line intellectual community" seems less like a fiction. However, there are still many technological and methodological problems such as quantifying social phenomena, handling missing data, data linkage, etc. which need to be resolved. Even more serious than these problems are the social and political problems confronting social data systems which will probably inhibit concepts like the World Information Synthesis Encyclopedia (WISE), as discussed at length in KOCHEN,

for many years to come.

In the meantime, social planners and policy-makers should still be able to look forward to considerably more assistance from better designed and more technologically advanced social numeric data base systems.

Bibliography

- Autrey, Pam. "Family and Child Statistics Available from TDCA." Texas Libraries, Vol. 39, No. 3 (Fall 1977), pp. 124-128.
- Autrey, Pam. "Statewide Information Support for Program Planning at the Community Level: A Proposal." Proceedings of the 38th Annual Meeting of the American Society for Information Science (ASIS), Vol. 12, Pt. 1, pp. 107-108. Boston, Mass., October 26-30, 1975. Washington, D.C.: ASIS, 1975.
- Bennet, John L. and Fried, John B. "Bibliographic and Numeric Data Bases - A Comparison of Online Interfaces." Proceedings of the 39th Annual Meeting of the American Society for Information Science (ASIS), Vol. 13, Pt. 1, p. 68. San Francisco, Calif., October 4-9, 1976. Washington, D.C.: ASIS, 1976.
- Bisco, Ralph L. Data Bases, Computers, and the Social Sciences. New York, N.Y.: Wiley-Interscience, 1970.
- Braybrooke, David. Philosophical Problems of the Social Sciences. New York, N.Y.: Macmillan, 1965.
- Claydon, Charles R. "Computer Software for Retrieval and Analysis of Numeric Data." Proceedings of the 38th Annual Meeting of the American Society for Information Science (ASIS), Vol. 12, Pt. 2, microfiche. Boston, Mass., October 26-30, 1975. Washington, D.C.: ASIS, 1975.
- David, Martin H., Gates, William A., and Miller, Roger F. Linkage and Retrieval of Microeconomic Data: A Strategy for Data Development and Use. Lexington, Mass.: Lexington Books, 1974.
- Dominick, Wayne D. "The User Interface to Numeric Data Bases." Proceedings of the 39th Annual Meeting of the American Society for Information Science (ASIS), Vol. 13, Pt. 1, p. 70. San Francisco, Calif., October 4-9, 1976. Washington, D.C.: ASIS, 1976.
- Dunn, Edgar S. Social Information Processing and Statistical Systems - Change and Reform. New York, N.Y.: Wiley-Interscience, 1974.
- Farnsworth, George L. "More Data -- More Need." Bulletin of the American Society for Information Science, Vol. 1, No. 6 (Jan. 1975), p. 3.

Ferguson, Jack. Specialized Social Science Information Services in the United States. New York, N.Y.: Columbia University Bureau of Applied Social Research, 1965.

Fried, John B., Luedke, James A., and Rubin, Stephen A. "Online Numeric Database Systems." Online, Vol. 1, No. 3 (July 1977), pp. 70-72.

Fried, John B. "On-Line Numeric Data Bases." Bulletin of the American Society for Information Science, Vol. 1, No. 7 (Feb. 1975), pp. 17-18.

Goldstein, Charles M. "User-Oriented Interfaces for Bibliographic and Numeric Data Bases: Conceptual Background." Proceedings of the 39th Annual Meeting of the American Society for Information Science (ASIS), Vol. 13, Pt. 1, p. 69. San Francisco, Calif., October 4-9, 1976. Washington, D.C.: ASIS, 1976.

Gottlieb, Steven E. and Hearle, Edward F.R. "Urban Information--An Overall View." Bulletin of the American Society for Information Science, Vol. 1, No. 6 (Jan. 1975), pp. 8-9.

Greenberger, Martin. "Numerical Data Bases, Statistical Analysis, and Modeling: Report of Workshop 2." In: Greenberger, Martin, ed. Networks for Research and Education: Sharing Computer and Information Resources Nationwide. Cambridge, Mass.: M.I.T. Press, 1974.

Herner, Saul and Vellucci, Matthew J. Selected Federal Computer-Based Information Systems. Washington, D.C.: Information Resources Press, 1972.

Inter-University Consortium for Political Research. A Guide to Resources and Services, 1973-74. Ann Arbor, Mich.: University of Michigan Institute for Social Research, 1973-1974.

Jones, Ray. "Data Base Interface and the Reference Librarian." Proceedings of the 36th Annual Meeting of the American Society for Information Science (ASIS), Vol. 10, pp. 101-102. Los Angeles, Calif., October 21-25, 1973. Washington, D.C.: ASIS, 1973.

Kissman, Henry M. "Building an On-Line Data Retrieval System." Bulletin of the American Society for Information Science, Vol. 1, No. 7 (Feb. 1975), pp. 16, 36-37.

Kochen, Manfred. Information for Action: From Knowledge to Wisdom. New York, N.Y.: Academic Press, 1975.

Licklider, J.C.R. "The On-Line Intellectual Community." In: Overhage, C.F.J. and Harman, R. Joyce, eds. Intrex, Report of a Planning Conference on Information Transfer Experiments. Cambridge, Mass.: M.I.T. Press, 1965.

- London University. London University Central Information Services (LUCIS) Guide to Computer Based Information Services. 2nd edition. London, England: University of London, 1977.
- Luedke, James A., Jr., Fried, John B., and Kovacs, Gabor J. "Numeric Data Bases and Systems." Annual Review of Information Science and Technology, Vol. 12. Washington, D.C.: American Society for Information Science, 1977.
- Luedke, James A., Jr. "Numeric Data Bases On-Line." On-Line Review, Vol. 1, No. 3 (Sept. 1977), pp. 207-215.
- Lufburrow, Nancy C. "Social Indicators; or, Selected Federal Social Statistical Programs," RQ (Summer 1977), pp. 301-306.
- Mathies, M. Lorraine and Watson, Peter G. "The 1970 Census." In: Computer-Based Reference Service. Chicago, Ill.: American Library Association, 1973, pp. 142-151.
- Platt, Gordon. Data Bases in Europe: A Directory to Machine-Readable Data Bases and Data Banks in Europe. London: ASLIB, 1975.
- Powell, Debra B. and Barnes, Robert E. "Public Data Files for Demographic and Social Research." Review of Public Data Use, Vol. 5, No. 4 (July 1977), pp. 3-10.
- Rowe, Judith S. and Ryan, Mary. "Library Service from Numerical Data Bases: the 1970 Census as a Paradigm." College and Research Libraries, Vol. 35, No. 1 (Jan. 1974), pp. 7-15.
- Rudner, Richard S. Philosophy of Social Science. Englewood Cliffs, N.J.: Prentice-Hall, 1966.
- Schmidt, Allan H. "A Computer Graphic Response to the Information Explosion." Bulletin of the American Society for Information Science, Vol. 1, No. 6 (Jan. 1975), pp. 14-15.
- Sessions, Vivian S. "Primary and Secondary Data Base Professionals: Time for Rapprochement?" Review of Public Data Use, Vol. 3, No. 1 (Jan. 1975), pp. 1-6.
- Shuman, Jack Norman. "The Data Revolution: Its Policy Implications." Bulletin of the American Society for Information Science, Vol. 1, No. 7 (Feb. 1975), pp. 11-12; 34-35.
- Texas State Library. Public Services Department. Directory of Data Base Resources in Texas State Government. Austin, Texas: Texas State Library, 1978.

20.
Tymnet, Inc. Subscribers' Directory. Cupertino, Calif.:
Tymnet, Inc., n.d.

Tyzenhouse, Joanne. "Statistical Bases for the Non-Econometric." Online, Vol. 2, No. 2 (April 1978), pp. 48-54.

U.S. National Technical Information Service. Directory of Computerized Data Files and Related Software Available from Federal Agencies. Washington, D.C.: U.S. Dept. of Commerce, 1974.

Weldon, Jay-Louise. "Managing the Census Data Base -- Data Description, Acquisition and Manipulation." In: Winkler, Stanley, ed. AFIPS Conference Proceedings: Proceedings of the National Computer Conference, Vol. 45, pp. 863-867. New York, June 7-10, 1976. Montvale, N.J.: AFIPS Press, 1976.

Williams, Martha. "1977 Data-Base and On-Line Statistics." Bulletin of the American Society for Information Science, Vol. 4, No. 2 (December 1977), pp. 21-23.